

Amendments to the Abstract:

A microwave plasma processing method and, in which a linear plasma is produced by means of a microwave, ~~the surface of an object to be processed is held horizontally with respect to the linear plasma, and the~~ an object is to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure ~~while~~ when the object is being moved, ~~a microwave plasma processing apparatus and its plasma head are disclosed. The~~ while a surface of the object is maintained at a horizontal position with respect to the linear plasma. A plasma head has an H-plane slot antenna, and slots are made in the slot antenna at a pitch of $\lambda_g/2$ in zigzag manner arranged alternately on both sides of the a centerline of the a waveguide at a pitch of $\lambda_g/2$ (λ_g : wavelength of the microwave with the waveguide). ~~The distance from the slots to the emission end of the plasma head is set to $n \cdot \lambda_g/2$ (λ_g is the wavelength in the tube of the microwave). The plasma head further has an E-plane slot antenna, and slots are made in the slot antenna at a pitch of λ_g along the centerline of the waveguide. A uniforming line having a distance of $n \cdot \lambda_g/2$ from the slots to the~~ an emission end of the plasma head is disposed provided (n: an integral number).